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not mounted to the frame of the fork lift

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54 Baler/Compactor,

57 A baler/compactor 10 has fork sockets 11 which enables it to be lifted and transported by a fork lift truck 13. It also has hydraulic hoses 54 which can be coupled to the auxiliary hydraulic supply 50 of the fork lift truck. The baler/compactor comprises an open topped container 20 having a door 22 in its base and a portal frame 32 which carries the compacting ram 30 and platten 33. The frame 32 can be swung to one side to uncover the container for filling. The door 22 has a latch 24 and an hydraulic actuator 23 is provided to open and close the door when it has been unlatched and to swing the portal frame 32 between an upright and swung out position when the door is latched. The baler/compactor may be of the type having a front opening door or of the horizontal type which is carried fore-and-aft by the fork lift truck. The machine may simply compress and eject waste material, or bale the waste material as required.

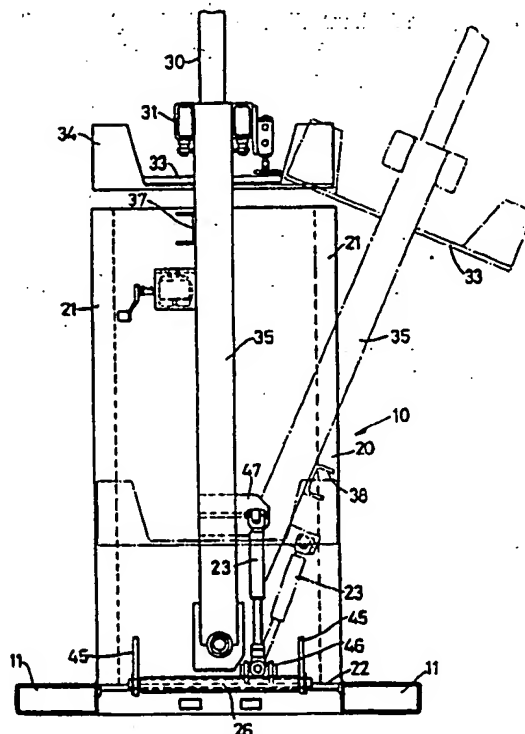


Fig. 2

EP 0 392 842 A1

BALER/COMPACTORS

This invention relates to baler compactor.

Such machines are well known and are used for compressing waste such as cardboard, paper, plastic items or tins etc., into compact units for making into bales or bagging prior to disposal.

The machines vary in size but are normally static, often bolted to a floor. They carry a hydraulic press and power pack having a self contained electric motor control to operate the press and are plugged in to a nearby electrical source.

A disadvantage of such machines is that the waste to be baled or bagged has to be brought to the machine. Another disadvantage is the need to install a power pack to operate the hydraulic system of the machine.

An object of this invention is to obviate or mitigate the aforementioned disadvantages.

According to the present invention there is provided a baler/compactor machine which is connectable to a vehicle for transporting to different areas within a site and wherein the hydraulically operated press is connectable directly to hydraulic controls of the vehicle.

Preferably, the baler/compactor machine has a base adapted to receive the forks of a fork lift truck, and hydraulic hoses adapted for connection to an hydraulic supply of the fork lift truck for operation of the hydraulic press.

Preferably, the machine has a container body at one end of which is a compacting means extendable into the body to compact material contained therein into a compacted mass and an openable door for removal of the compacted mass.

Preferably, the openable door is at the opposite end of the body.

Alternatively, the openable door is a side wall of the body.

The machine may be carried in an upright or substantially horizontal disposition by the fork lift vehicle.

The compacting means is mounted on a pivotal frame which can pivot the compacting means away from the end of the body to enable material to be placed in the body.

The hydraulic system includes safety means to allow actuation of the compacting means only when the compacting means is correctly positioned relative to the end of the body.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a pictorial view showing a baler/compactor machine according to the invention carried by a fork lift truck;

Fig. 2 is a rear elevation of the

baler/compactor;

Fig. 3 is a side elevation corresponding to Fig. 3; and

Fig. 4 is a pictorial view of a modified baler/compactor carried by a fork lift truck.

Referring firstly to Figs. 1 to 4 of the drawings, the baler/compactor machine 10 has a pair of fork sockets 11 to receive the forks 13 of a fork lift truck 13.

In Fig. 1 the machine carries an upright safety guard 14 and a top guard plate 15 both of which are omitted from the other views.

The machine 10 has an upright open topped container 20 having internal bracing, shown generally at 21 and a drop bottom door 22 in its base. The door 22 is normally held closed by an hydraulic actuator 23 and also by a latch 24 which is released preparatory to the actuator allowing the door to open.

The latch 24 comprises a spring loaded bolt 25 attached to the underside of the door at the front end of the machine, remote from the door pivot 16 at the rear end of the machine, and a latch keep 27 which is welded to a pivot bar 28 of a hand lever 29.

The lever 29 is located at one side of the container and extends upwards, passing through a guide 29. When pulled rearwards, i.e. to the right in Fig. 3, the lever pivots the latch keep 27 out of engagement with the spring loaded bolt 25 as described more fully hereinafter.

At the top of the container an hydraulic press actuator in the form of a cylinder 30 is mounted on the cross bar 31 of a pivotal frame 32 and has a downwardly extending piston which carries a platten 33.

This actuator provides the pressure to enable the platten 33 to compact waste material loaded within the container 20.

The platten 33 has guide wings 34 or bearings to facilitate entry into the container, the internal bracing 21 providing a location for the guide wings.

The guide wings 34 or bearings provide stability and load reaction should the platten encounter any incompressible debris or even uneven waste loading.

The portal frame 32 includes a pair of upright arms 35 connected at their upper ends to the crossbar 31 and pivotally mounted at the sides of the container adjacent to the base thereof.

The arms 35 are pivotal to one side of the container to an angle of, e.g. 23° in order to uncover the open top and allow material to be dropped in to the container for compacting. Stop members 37, 38 are provided to limit the pivotal

movement of the arms in each direction and an hydraulic actuator 23 is provided to pivot the arms 35. This actuator 23 also operates the door 22. When the door is latched by latch 24, expansion of the actuator 23 will raise the portal frame to the vertical and retraction will pivot the portal frame to one side. When the door is unlatched, and with the pivotal frame in the upright position, expansion of the actuator will allow the door to open, and retraction will raise the door to the closed position.

In order to allow pivotal operation of the portal frame 32 and the container door 22 by the same hydraulic actuator 23, an interlock mechanism 39/40 is provided to ensure that the door can only be unlatched when the portal frame is in the upright position and also to ensure that the portal frame cannot swing to one side when the door is unlatched.

The interlock mechanism comprises a pawl 39 at the upper end of the latch keep 27 and an abutment plate 40 on the underside of the adjacent arm 35 and located above the pawl 39. The pawl and plate are normally out of engagement, but when the latch keep 27 is pivoted to its unlatched position, the pawl and plate engage. Thus, the latch keep 27 is held in the unlatched position, - the hand lever 29 returns to its original position by spring pressure - and the portal frame is held in the upright position.

The pivotal end of the bottom drop door 22 extends beyond one side wall of the container and the door pivot 26 is carried on a pair of brackets 45 welded to that side wall.

A clevis bracket 46 is welded to the upper surface of that extended part of the door and pivotally carries one end of the actuator 23, the other end of which is attached to a bracket 47 on the adjacent swing arm 35. When the actuator 23 is extended, the door will pivot downwards and the clevis bracket 46 will rotate about the actuator connection.

The hydraulic actuators which control movement of the platten actuation cylinder 30 and the combined swing arm and door actuation cylinder 23 are pressurised from an auxiliary hydraulic supply 50 of a fork lift truck 13. The hydraulic supply includes a pair of nozzles 53 to which flexible hoses 54 are attached by quick release couplings to valve 51 of the hydraulic supply 50. These hoses 54 are connected to metal pipes 55 which run along the inside of one arm 35 (omitted from Fig. 1) to the platten actuation cylinder 30 and to the door/swing arm cylinder 23.

In a preferred use, the bales/compactor machine is carried by a form lift truck to various sites where waste material is to be found. The hydraulic hoses 54 are coupled to the truck's auxiliary supply 50 and the portal frame 32 is in the swung-to-one-

side position to facilitate loading. As and when required, the portal frame is swung to the vertical and the material in the container 20 is compressed to make room for more material, after which the portal frame is swung to the side again.

When the container 20 is full or when it is to be emptied, the fork lift truck 13 carries it to the disposal area. The pivotal frame 32 is raised to the upright position and the latch 24 is released manually via the hand lever 29.

The baler/compactor machine is then, if necessary raised by the fork lift truck so that the door 22, when released, can fully open.

The door actuator 23 and the compaction cylinder 30 are both actuated so that the compaction cylinder 30 pushes the compacted waste out of the container and the door actuator allows the door to drop open. The compaction cylinder and door actuator can then reverse to raise the platten and draw the door upwards until the spring urged bolt 25 engages with the latch keep 27 which is released by disengagement of the pawl and the interlock plate when the actuators are reversed.

The container 20 may be provided with standard baler/compactor features, not shown, such as 'dogs' to prevent a compacted mass expanding upwards, and slots and grooves to enable baler twine to be passed round the compacted mass within the container.

In a modification (not shown) the baler/compactor machine is of the horizontal type with the container disposed fore and aft when carried by the fork lift truck. A platten is located at the rear of the container for movement in and out and a horizontal ram is provided to move the platten in and out. An exit door is provided at the front end of the container and a loading hopper door in the top of the container.

The ram is telescopic so that it can push the platten to the front end and so also to restrict the length of the ram rearwardly of the container toward the truck.

The hydraulic system ensures that the hopper door cannot open when the platten ram is capable of forward motion. When the ram retracts, the hopper door opens or becomes openable automatically or hydraulically. When the door is closed fluid pressure is fed to the ram so that it can be moved forward on command.

In another embodiment, illustrated in Fig. 4, the baler/compactor machine is of a standard type having an upright, open topped container 60 and a door front 61 which is hinged to one side wall and latched to the other side wall by pivotal latches 62.

Material is compacted by a vertical hydraulic press 63 comprising a platten (not shown) located behind a shield 64, a pair of vertical rams 65 transversely disposed and a central support pillar

66 passing through a transverse support frame 67 which is pivotally mounted on a pillar 68 on the hinged side of the container. Standard fittings within the container co-operate when the door is opened to tip the compacted mass out of the container.

The machine although otherwise standard has fork sockets 69 and can be carried by a fork lift truck 70 and the vertical press 63 is actuated from the truck's auxiliary hydraulic supply 71 via flexible hoses 72.

10. A baler/compactor machine substantially as hereinbefore described with reference to the accompanying drawings.

Claims

1. A baler/compactor machine which is connectable to a Vehicle for transporting to different areas within a site and wherein the hydraulically operated press is connectable directly to hydraulic controls of the vehicle.

2. A machine as claimed in claim 1 which has a base adapted to receive the forks of a fork lift truck, and hydraulic hoses adapted for connection to an hydraulic supply of the fork lift truck for operation of the hydraulic press.

3. A machine as claimed in claim 1 or 2 which has a container body, at one end of which is a compacting means extendable into the body to compact material contained therein into a compacted mass and an openable door for removal of the compacted mass.

4. A machine as claimed in claim 3 in which the openable door is at the opposite end of the body.

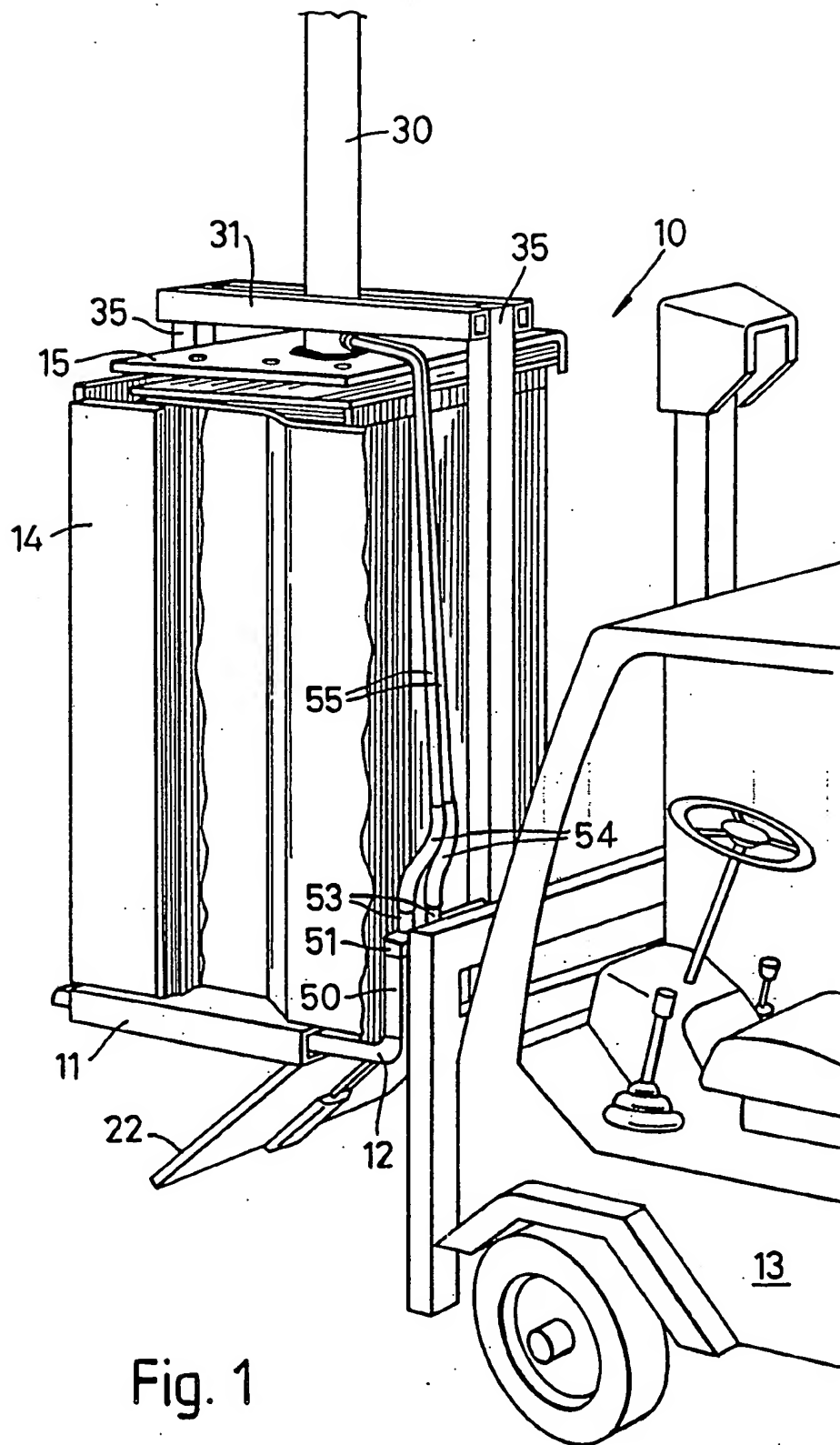
5. A machine as claimed in claim 3 in which the openable door is or is in a wall of the body.

6. A machine as claimed in any one of claims 3 to 5, in which the compacting means is mounted on a pivotal frame which can pivot the compacting means away from the end of the body to enable material to be placed in the body.

7. A machine as claimed in any one of claims 3 to 5 in which an hydraulic system is provided and includes safety means to allow actuation of the compacting means and opening of the door only when the compacting means is correctly positioned relative to the end of the body.

8. A machine as claimed in any one of claims 1 to 4, 6 or comprising an upright open topped container having a door in its base, latch means to latch the door in a closed position and hydraulic means to open and close the door, said hydraulic means being actuatable relative to movement of the door only when the latch has been un-latched.

9. A machine as claimed in claim 8, in which said door actuating hydraulic means also serves to actuate the pivotal frame carrying the compacting means when said door is latched.



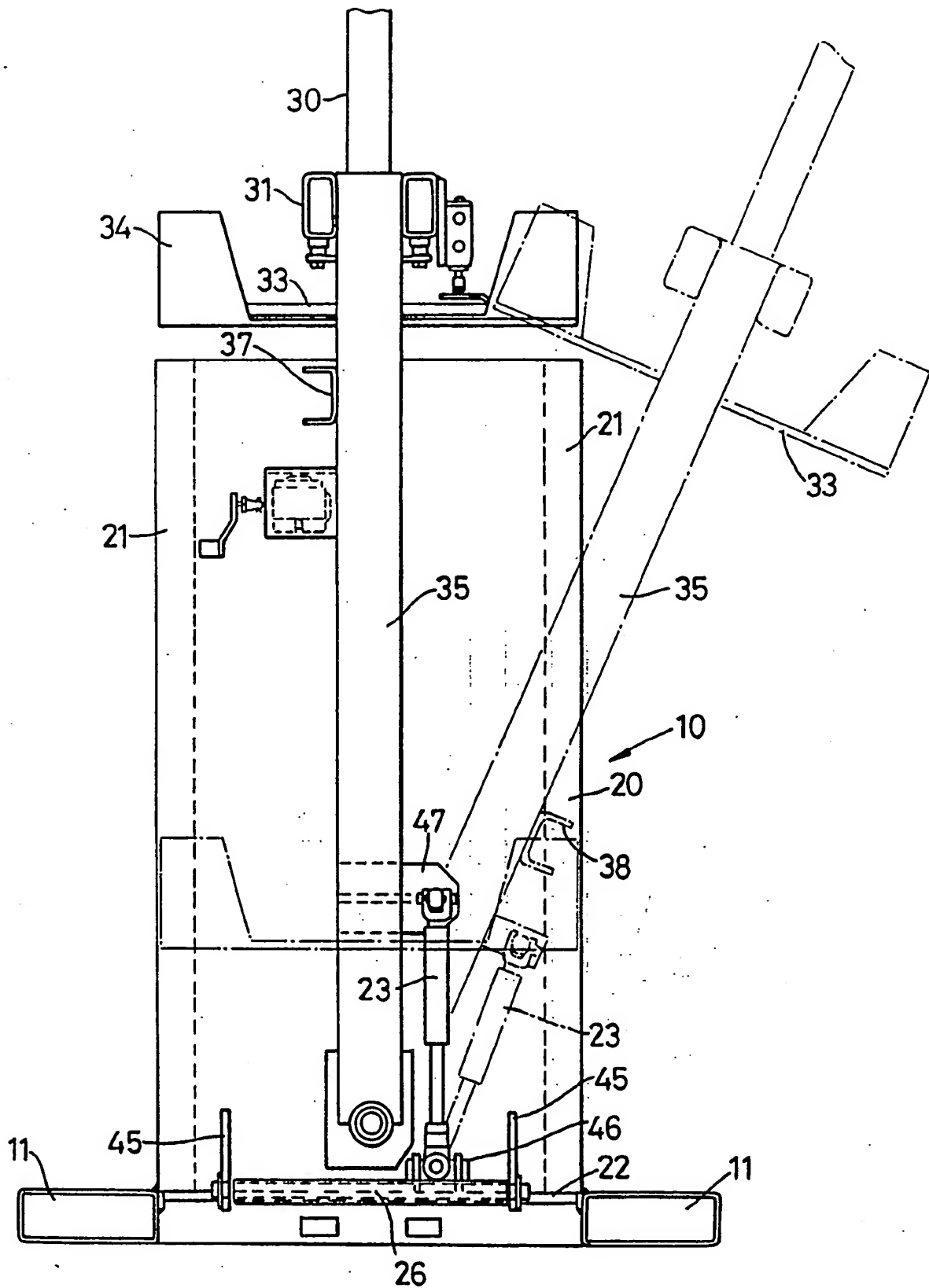
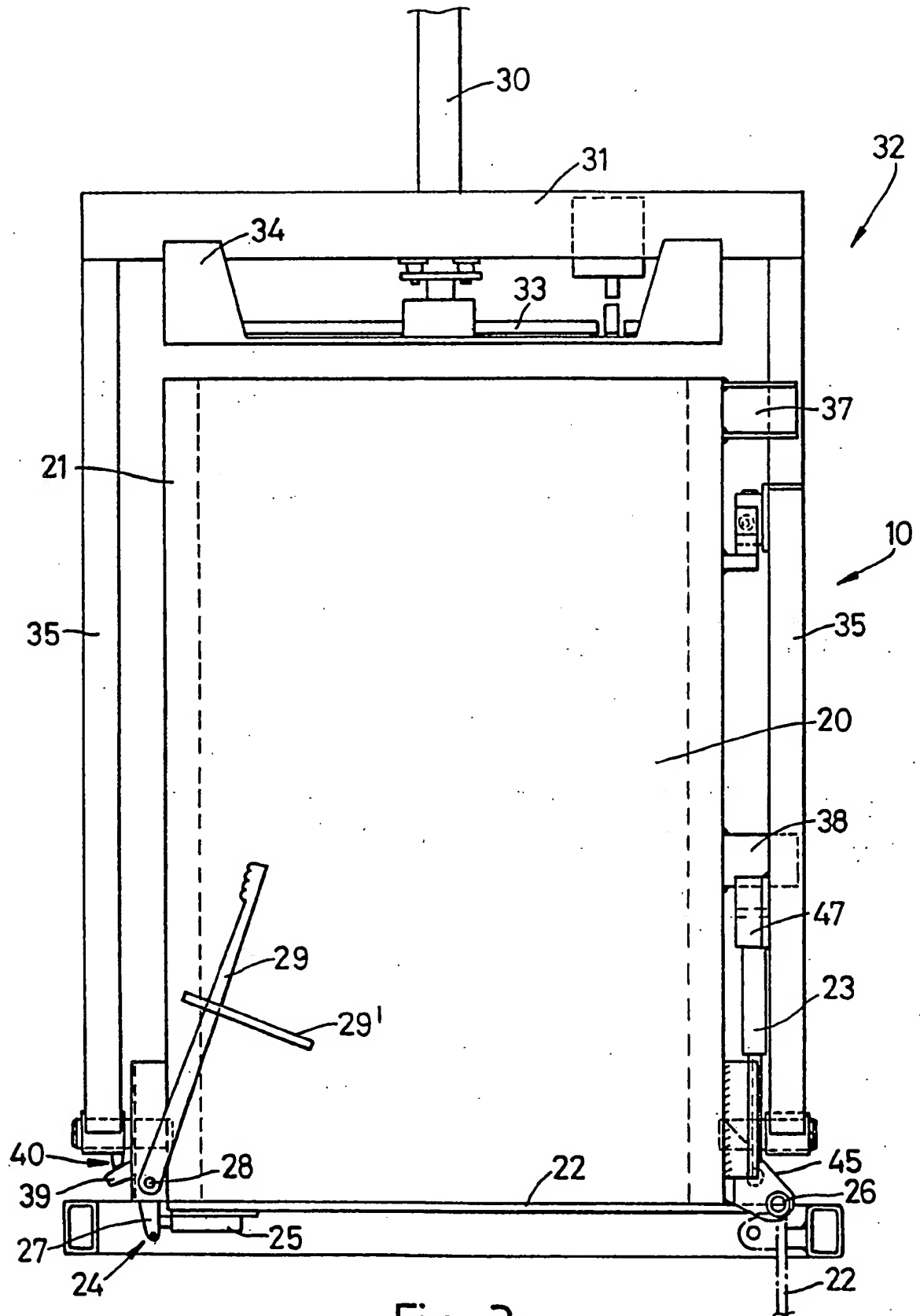


Fig. 2



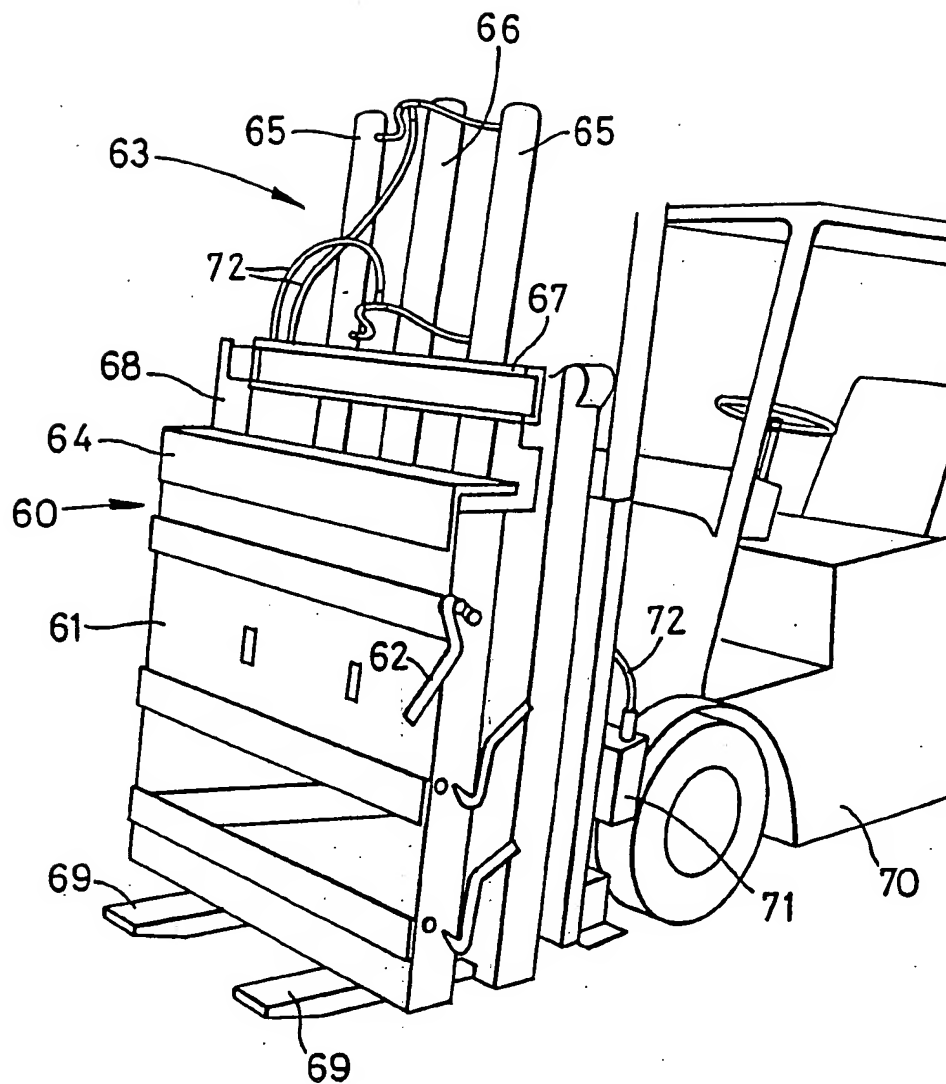


Fig. 4



European Patent
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EUROPEAN SEARCH REPORT

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90303952.7
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.)
X	<u>AU - A - 22 658/67</u> (BAKER) * Fig. 1 *	1, 2, 6	B 30 B 9/30
A	<u>DE - A - 2 319 777</u> (AB ORWA) * Fig. *	1, 2, 3, 4	
A	<u>AU - B - 64 479/86</u> (SUNBEAM) * Fig. 1 *		
A	<u>DE - A - 2 314 897</u> (INTERNATIONAL) * Fig. 1, 8 *		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.) B 30 B B 60 K B 66 F
Place of search VIENNA		Date of completion of the search 06-07-1990	Examiner GLAUNACH
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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